

## **Appendix A**

Selections from the 1999 Lower Delaware River Monitoring Program Field  
Instruction Manual (DRBC, June 1999).

This appendix is useful for future study design and logistics.

## **Description of Summer 1999 Program Logistics**

On the attached schedule, several categories of trips are listed. This document explains logistics of each sampling run.

**WQ series:** Lists regular water-quality runs at fixed sites, sampled at least 5x/yr. DRBC does field and lab analyses. No flow measurements will be collected this year, though we have set up stream gage marks for future measurement. During the WQ series runs, we will measure DO, pH, conductivity, air temperature, water temperature, and gage height on-site, and collect water samples in glass bottles for lab analysis of nutrients (PO<sub>4</sub>, NH<sub>4</sub>, NO<sub>2</sub>+NO<sub>3</sub>, chlorophyll A).

**BACT series:** 1999 special study consisting of fixed sites plus river recreation accesses and smaller tributaries chosen to be part of the 1999 effort only, not to be sampled in a regular future monitoring program unless severe problems exist, or until DRBC pursues enterococcus standards for Zone 1. EPA does lab work. On-site we will measure DO, air temp, water temp, pH, and specific conductance. We will collect water samples in sterilized plastic bottles and transport in coolers to EPA lab in Edison, NJ for fecal coliform and enterococcus analyses (holding time is 6 hours from 1<sup>st</sup> sample collected).

## **SAFETY FIRST!**

**Routes 29, 46, 32, and 611 are winding and narrow two-lanes with blind curves and pullouts. If we are running close to violating holding times for bacteria samples, just deliver what you are able and don't worry about finishing the run at all costs. Drive slowly and safely, use the orange vests at bridge crossings, and watch your footing at the access areas. Dress for the weather, and plan on getting wet.**

## **WQ Run 1, Trenton to Stockton**

6 sites, 9 samples

**Dates:** 8/5

**Staff:** 8/5: Limbeck, Wilcox

**Sites:** Calhoun St Bridge (PA & NJ sides)  
Buck Creek, Yardley, PA  
Aquetong Creek, New Hope, PA  
Stockton Bridge (PA & NJ sides)  
Washington Crossing Bridge (PA & NJ sides)  
Jacobs Creek, Hopewell Twp, NJ

### **Driving Directions**

Begin at **Calhoun St Bridge**. Park on PA side in small lot just US of bridge. Continue to **Buck Creek**. Park at small lot next to site on Coldspring Ave off Main St bridge over Buck Creek. Continue N to **Aquetong Creek**, West Mechanic St bridge - park at Bucks Co W&S Auth lot next to bridge. Continue N on Rt. 32 to **Stockton Bridge** - park on NJ side. Go South to **Washington Crossing Bridge**, park in lot on NJ side. Go south to **Jacobs Creek** - pull in private drive just before creek (Foritano property, old Yardley Mill).

### **Collection & Transport Procedures**

Use meters to either measure instream if accessible or collect sample using bridge sampler (rope & metal case holding plastic sampling bottle). On bridges, sample at 1/3 and 2/3 channel (PA & NJ sides), lower sampler into river, allow to rinse thoroughly, retrieve sampler and pour into pre-labeled nutrient bottles, store nutrient samples in cooler for lab analysis (same day). Repeat sample, use for pH and conductivity meters. Instream collection should be done by facing upstream and collecting sample in undisturbed water. Air-calibrate DO meter, record air temperature, then lower probe by 100 ft cable into river. Read DO and water temperature. Record all results on water-quality form.

## WQ Run 2, Stockton to Milford

**10 sites, 13 samples**

**Dates:** 8/5

**Staff:** 8/5: Limbeck, Wilcox

**Sites:** Paunacussing Creek, PA  
Tohickon Creek, PA  
Tinicum Creek, PA (need survey equipment)  
Milford Bridge (PA and NJ sides) - park NJ side  
Hakihokake Creek, Milford, NJ  
Frenchtown Bridge (PA & NJ sides) - park NJ side  
Nishisakawick Creek, Frenchtown, NJ  
Lumberville-Raven Rock Foot Bridge at Bulls Island SP, NJ (PA & NJ sides)  
Lockatong Creek, NJ  
Wickecheoke Creek, NJ

### **Driving Directions**

Begin at **Paunacussing Creek** bridge over Rt. 32 in Lumberville, PA. Park just short of bridge (open area on right). On to **Tohickon Creek**, cross over creek, bear left and park in first small lot on left. On to **Tinicum Creek**, take Rt. 32 N, turn left on Tinicum Creek Road, pass yellow house, turn left into first driveway (private drive). Approach tributary creek, follow on foot to confluence with Tinicum Creek, where survey marks can be found a short distance DS to left. On to **Milford Bridge**, continue N on Rt. 32 and park in boat access lot just short of bridge. To **Hakihokake Creek**, cross to NJ and park in municipal lot approx. 1/4 mi. on right (just past creek). Go South on Rt. 29 to Frenchtown, park on NJ side by restaurant for **Frenchtown Bridge**. Go back through town to Rt. 12 (Kingwood Ave), turn left into municipal park, take sample from **Nishisakawick Creek** in park, and gage height from Rt. 12 bridge. Go South on Rt. 29 to Bulls Island SP, and take samples from **Lumberville-Raven Rock Foot Bridge** over Delaware. Go South on Rt. 29, turn Left on Federal Twist Road, Right on Rosemont-Raven Rock Road, cross over **Lockatong Creek** and park in small open spot on left. Go back to Rt. 29S, cross **Wickecheoke Creek** and park in D&R Canal SP office lot. Walk back to Rt. 29 bridge over Wickecheoke.

### **Collection & Transport Procedures**

Use meters to either measure instream if accessible or collect sample using bridge sampler (rope & metal case holding plastic sampling bottle). On bridges, sample at 1/3 and 2/3 channel (PA & NJ sides), lower sampler into river, allow to rinse thoroughly, retrieve sampler and pour into pre-labeled nutrient bottles, store nutrient samples in cooler for lab analysis (same day). Repeat sample, use for pH and conductivity meters. Instream collection should be done by facing upstream and collecting sample in undisturbed water. Air-calibrate DO meter, record air temperature, then lower probe by 100 ft cable into river. Read DO and water temperature. Record all results on water-quality form.

## WQ Run 3, Milford to Easton

9 sites, 11 samples

**Dates:** 8/3

**Staff:** 8/3: Limbeck, Wilcox

**Sites:** Cooks Creek, PA; Frys Run, PA; Lehigh River, PA; Bushkill Creek, PA; Easton Northampton St Bridge (PA, NJ); Lopatcong Creek, NJ; Pohatcong Creek, NJ; Riegelsville Bridge (PA, NJ); Musconetcong River, NJ

### Driving Directions

**Cooks Creek, PA:** Route 611 N, then make a Left onto Route 212, and lastly make a Right onto Red Bridge Road and follow the Road until you reach the bridge. Park before the bridge and walk to the downstream side to take the sample and gage height reading.

**Fry's Run, PA:** Route 611 N to Northampton County Park. Pull into the parking lot. Sample from the old bridge located just upstream from the Route 611 bridge. **DO NOT SAMPLE FROM THE ROUTE 611 BRIDGE - too dangerous!!**

**Lehigh River, PA:** Continue on Route 611 N and pull into the McDonalds parking lot in Easton (on the Left). From the parking lot walk across the street to sample and take a gage height measurement.

**Bushkill Creek, PA:** 611N bears right to cross under Rt. 22. Where 611 makes Right turn to continue North, first bridge is over Bushkill Creek. Park wherever you can and take sample from US side of bridge.

**Easton Northampton Street Bridge, PA/NJ:** Continue down South Main Street (Phillipsburg, NJ) to the bridge. Park in the lot just short of the guard shack on the NJ side and walk out on the bridge to retrieve the samples.

**Lopatcong Creek, NJ:** From Pohatcong Creek, continue North on River Road (pay attention to the bends) to Carpentersville Road, then make a Left onto High Street and then make another left towards Phillipsburg, NJ (Main Street?). Park on the right side of the road by the Railroad Bridge Trestle. Walk back to the upstream side of the bridge over Lopatcong Creek.

**Pohatcong Creek, NJ:** From the Riegelsville Bridge, continue North on River Road to the bridge over Pohatcong Creek. Park near the bridge and sample from the upstream side.

**Riegelsville Bridge (NJ-PA):** Go North on River Road, then make a Left onto Route 627 and take 627 N to the bridge. Walk out on the bridge and take samples.

**Musconetcong River, NJ:** From DRBC take Route 29 N to Milford, NJ, at the light in Milford turn Left onto Bridge Street, then turn Right onto Church Street. Follow Church Street around the curve (it will become a narrow road that runs along the river, Route 627). Use the River Road/Route 627 bridge to sample from.

### Collection & Transport Procedures

Use meters to either measure instream if accessible or collect sample using bridge sampler (rope & metal case holding plastic sampling bottle). On bridges, sample at 1/3 and 2/3 channel (PA & NJ sides), lower sampler into river, allow to rinse thoroughly, retrieve sampler and pour into pre-labeled nutrient bottles, store nutrient samples in cooler for lab analysis (same day). Repeat sample, use for pH and conductivity meters. Instream collection should be done by facing upstream and collecting sample in undisturbed water. Air-calibrate DO meter, record air temperature, then lower probe by 100 ft cable into river. Read DO and water temperature. Record all results on water-quality form.

## **WQ Run 4, Easton to Belvidere**

**5 sites, 7 samples (MAY BE COMBINED WITH WQ RUN 5 FOR LONG DAY)**

**Dates:** 8/3

**Staff:** 8/3: Limbeck, Wilcox

**Sites:** Martins Creek, PA  
PA Railroad Bridge, Martins Creek, PA/NJ  
Belvidere-Riverton Bridge, PA/NJ  
Pequest River, Belvidere, NJ  
Buckhorn Creek, NJ

### **Driving Directions**

**Martins Creek, PA:** From DRBC take Route 29 N to Milford, NJ, cross the Milford-Upper Black Eddy Bridge to PA, turn Right onto Route 32 N, then take Route 611 N, make a Left onto Little Creek Road. The site is on the upstream side of the bridge. Park and walk to the bridge to take the sample.

**Belvidere-Riverton Bridge, PA/NJ:** This site is also in the town of Belvidere, NJ. To get there head towards the river, park near the bridge and walk out to take samples.

**Pequest River:** There are two sampling sites on the Pequest River. The first is the bacteria sampling site, located on the Market Street bridge over the Pequest River in Belvidere, NJ. The second is the Fixed water-quality monitoring site, located about one mile upstream at the Orchard Street bridge over the Pequest River. Take the gage height reading from this site.

**Buckhorn Creek, NJ:** From DRBC take Route 29 N to Milford, NJ. At Milford get on Route 519 N. Take Route 519 N to Roxbury Station Road to Hutchinson Road. The sampling site is located on the Hutchinson Road bridge over Buckhorn Creek

### **Collection & Transport Procedures**

Use meters to either measure instream if accessible or collect sample using bridge sampler (rope & metal case holding plastic sampling bottle). On bridges, sample at 1/3 and 2/3 channel (PA & NJ sides), lower sampler into river, allow to rinse thoroughly, retrieve sampler and pour into pre-labeled nutrient bottles, store nutrient samples in cooler for lab analysis (same day). Repeat sample, use for pH and conductivity meters. Instream collection should be done by facing upstream and collecting sample in undisturbed water. Air-calibrate DO meter, record air temperature, then lower probe by 100 ft cable into river. Read DO and water temperature. Record all results on water-quality form.

## **WQ Run 5, Belvidere to Delaware Water Gap**

**4 sites, 5 samples (MAY BE COMBINED WITH WQ RUN 4 FOR LONG DAY)**

**Dates:** 8/3                      **Staff:** 8/3: Limbeck, Wilcox

**Sites:** Columbia/Portland Foot Bridge, PA/NJ  
Dunnfield Creek, NJ  
Paulins Kill, NJ  
Delawanna Creek, NJ

### **Driving Directions**

**Columbia/Portland Foot Bridge, PA/NJ:** Use PA Rt. 611N, park at foot bridge on PA side.

**Dunnfield Creek, NJ:** cross I-80 East bridge, exit at visitors center, cross under I-80, make left to ramp for I-80 West, park in hikers lot on right. Use foot bridge over Dunnfield Creek. Get back on I-80 West, take last exit back into visitors center, then back onto I-80 East. Proceed to Paulins Kill.

**Paulins Kill Creek, NJ:** Route 46 N bridge. Cross over the bridge over Paulins Kill Creek, just before the Route 94 N off ramp. Park in the Colombia Lake Wildlife Management Area Lot. Walk back to the bridge to take the sample and the gage height reading.

**Delawanna Creek, NJ:** Take Route 620 out of Belvidere, then get on Route 46 N and park at the end of the ACI Truck Stop (on the Right). Cross the road to the downstream side to take the sample and the gage height

### **Collection & Transport Procedures**

Use meters to either measure instream if accessible or collect sample using bridge sampler (rope & metal case holding plastic sampling bottle). On bridges, sample at 1/3 and 2/3 channel (PA & NJ sides), lower sampler into river, allow to rinse thoroughly, retrieve sampler and pour into pre-labeled nutrient bottles, store nutrient samples in cooler for lab analysis (same day). Repeat sample, use for pH and conductivity meters. Instream collection should be done by facing upstream and collecting sample in undisturbed water. Air-calibrate DO meter, record air temperature, then lower probe by 100 ft cable into river. Read DO and water temperature. Record all results on water-quality form.

# **BACT Run 1, Trenton to Lambertville**

**16 sites, 19 samples**

**Dates:** 6/29, 7/20, 8/10

**Staff:** 6/29: Limbeck, Wilcox; Tsai, Suk (Suk or Tsai is Edison Runner)  
7/20: Limbeck, Wilcox; Tsai, Heinicke (Tsai is Edison Runner)  
8/10: Limbeck, Wilcox; Kratzer + 1 other (Fikslin, Santoro, Tsai or Suk is Edison Runner)

**Sites: (2 cars: 1 up PA side, 1 up NJ side, meet & deliver samples to Edison)**

**Note Sampling Start Time: from that point you have 4 hours to complete this run.**

**Samples must be at Edison Lab less than 6 hours from 1<sup>st</sup> sample collection.**

**Keep in contact using DRBC cell phones - each hour and at end of run.**

## **NJ CAR 1**

Calhoun St Bridge (PA,NJ)  
Scudders Falls Access  
Jacobs Creek  
Washington Crossing Bridge (PA,NJ)  
Fiddlers Creek  
Moore Creek  
Lambertville Boat Launch  
Swan Creek

## **PA CAR 2**

Buck Creek  
Yardley Access  
Dyers Creek  
Houghs Creek  
Jericho Creek  
Pidcock Creek  
Aquetong Creek  
Lambertville/New Hope Bridge (PA,NJ)

meet spot: Swan Creek site off Union St in Lambertville (grocery store parking lot)

**Driving Directions - see next page**

## **Collection & Transport Procedures**

Use meters to either measure instream if accessible or collect sample using bridge sampler (rope & metal case holding plastic sampling bottle). On bridges, sample at 1/3 and 2/3 channel (PA & NJ sides), lower sampler into river, allow to rinse thoroughly, retrieve sampler and pour into pre-labeled Whirl-Pak bag, store samples in cooler for transport to Edison lab. Repeat sample, use for pH and conductivity meters. Instream collection should be done by facing upstream and collecting sample in water undisturbed by your actions. if sampling in the Delaware, wade out to approximately 3 feet depth and open Whirl-Pak bag underwater at 1/2 depth, facing upstream. Do not contaminate the sample by allowing your hands to come in contact with the inside of the bottle. Air-calibrate DO meter, record air temperature, then lower probe by 100 ft cable into river. Read DO and water temperature. Record all results on water-quality form. Complete chain of custody form for bacterial samples, these are to accompany bacterial samples to EPA Edison lab.



## DRIVING DIRECTIONS

### BACT Run 1, Trenton to Lambertville

NJ Car 1:

**Calhoun Street Bridge (PA-NJ):** Take Route 29 S from DRBC to the bridge. Park on the PA side in the small lot just upstream of the bridge. **Scudders Falls Access:** Cross back over the Calhoun Street Bridge to NJ. Take Route 29 N to Scudders Falls Access, just past the bridge over Route 179 and the D&R Canal. Make a left into the access area, cross the canal bridge and park down the hill on the right. **Jacobs Creek:** Get back on Route 29 N and make a Right into driveway which exits Route 29N just past Jacobs Creek bridge (Foritano Property). Park in the lot and walk down to the creek. **Washington Crossing Bridge (PA-NJ):** Continue on Route 29 N to the light at the Washington Crossing Bridge. Make a right and bear left into the parking lot. Park there and walk out onto the bridge. **Fiddlers Creek:** Continue on Route 29 N and turn Right onto Fiddlers Creek Road, just North of Washington Crossing Park (just past gas station). The site is located at the entrance to Goiten property off Fiddlers Creek Road (house number 43). Do not block drive. **Moore Creek:** Continue on Route 29 N to Pleasant Valley Road. Turn Right onto Pleasant Valley Road and continue to Iron Bridge Farm on the Left (about ½ mile up Moore Creek). Park next to bridge. **Lambertville Boat Launch:** Continue on Route 29 N to Bridge Street (the street that crosses the bridge between Lambertville and New Hope) in Lambertville. Turn Left onto Bridge Street and then turn Left into the parking lot of the Lambertville Station. Go all the way through the parking lot to the far left and after you hit the gravel road the boat access just upstream of the SA. **Swan Creek:** Exit the Lambertville Station parking lot to the Left. Make a Right onto South Union Street. Park in the grocery store parking lot. When done wait for the other car to arrive.

PA Car 2:

**Buck Creek:** Take Route 29 S from DRBC to the Calhoun Street Bridge and cross over into PA. Make a Right onto Route 32 N and follow it to West Afton Avenue. Make a Right onto W. Afton Avenue, then make another Right onto Main Street, followed by a final Right onto Coldspring Avenue just past the bridge over Buck Creek. Park on the Left in the grass. **Yardley Access:** Get back on Route 32 N and go about a mile and the Yardley Access will be on the Right. See the sign. **Dyers Creek:** Continue on Route 32 N and pull off to the left into the gravel driveway for the pump station just past the bridge over Dyers Creek. **Houghs Creek:** Get back onto Route 32 South. Make a Right onto Woodside Road, then make another Right onto Taylorsville Road. Follow Taylorsville Road to Aqueduct Road. Make a Left onto Aqueduct Road (right before bridge crossing Houghs Creek). Park on the side of the road and walk down to the creek. **Jericho Creek:** Continue on Taylorsville Road until it intersects Route 32. Take Route 32 N (make a Left) and turn right onto Stony Brook Road. Park on side of the road before the bridge over Jericho Creek. **Pidcock Creek:** Get back onto Route 32 N and make a Left into Bowmans Hill Wildflower Preserve. Press the button at the metal gate. Enter the preserve and park at the gate just below the visitors center (do not block access). Walk to the stone bridge just down the hill from the visitor center. **Aquetong Creek:** Continue on Route 32 N into New Hope, PA. Make a Left onto West Mechanics Street, follow the road all the way up and take the fork in the road to the Right. There is an area to park just past the bridge over Aquetong Creek on the Right. **Lambertville/New Hope Bridge (PA-NJ):** Continue on Route 32 N to Bridge Street and make a Right onto the bridge. Cross into NJ and park in Lambertville in the Lambertville Station parking lot. Walk out onto the bridge to take samples.

## **BACT Run 2, Lambertville to Milford**

**20 sites, 24 samples**

**Dates:** 7/6, 7/27, 8/17

**Staff:** 7/6: Limbeck, Wilcox; Kratzer, Santoro (Santoro is Edison Runner)  
7/27: Limbeck, Wilcox; Tsai, 1 other (Tsai is Edison Runner)  
8/17: Kratzer, Wilcox + 2 others (Fikslin, Santoro, Tsai or Suk is Edison Runner)

**Sites: (2 cars: 1 up PA side, 1 up NJ side, meet & deliver samples to Edison)**

**Note Sampling Start Time: from that point you have 4 hours to complete this run.**

**Samples must be at Edison Lab less than 6 hours from 1<sup>st</sup> sample collection.**

**Keep in contact using DRBC cell phones - each hour and at end of run.**

### **NJ CAR 1**

Alexauken Creek  
Wickecheoke Creek  
Lockatong Creek  
Bulls Island Foot Bridge (NJ,PA)  
Warsaw Creek  
Warford Creek  
Copper Creek  
Kingwood Access  
Little Nishisakawick Creek  
Nishisakawick Creek  
Harihokake Creek

### **PA CAR 2**

Primrose Creek  
Stockton Bridge (NJ,PA)  
Paunacussing Creek  
Cuttalossa Creek  
Tohickon Creek  
Tinicum Creek  
Frenchtown-Uhlerstown Bridge (PA,NJ)  
Milford-Upper Black Eddy Bridge (PA,NJ)  
Hakihokake Creek (NJ)

meet spot: Country Corner diner, Rt. 29, N. Frenchtown, NJ

**Driving Directions - see next page**

### **Collection & Transport Procedures**

Use meters to either measure instream if accessible or collect sample using bridge sampler (rope & metal case holding plastic sampling bottle). On bridges, sample at 1/3 and 2/3 channel (PA & NJ sides), lower sampler into river, allow to rinse thoroughly, retrieve sampler and pour into pre-labeled Whirl-Pak bag, store samples in cooler for transport to Edison lab. Repeat sample, use for pH and conductivity meters. Instream collection should be done by facing upstream and collecting sample in water undisturbed by your actions. if sampling in the Delaware, wade out to approximately 3 feet depth and open Whirl-Pak bag underwater at 1/2 depth, facing upstream. Do not contaminate the sample by allowing your hands to come in contact with the inside of the bottle. Air-calibrate DO meter, record air temperature, then lower probe by 100 ft cable into river. Read DO and water temperature. Record all results on water-quality form. Complete chain of custody form for bacterial samples, these are to accompany bacterial samples to EPA Edison lab.

**Equipment Checklist:** see BACT Run checklist.

## DRIVING DIRECTIONS

### BACT Run 2, Lambertville to Milford

#### NJ CAR 1:

**Alexauken Creek:** From DRBC take Route 29 N to the bridge over Alexauken Creek. Park stream Right of the bridge on the downstream side. Walk across the road to take sample/gage reading. **Wickecheoke Creek:** Continue on Route 29 N to the old mill (Prattsville Mill). Pull in and park in the Delaware & Raritan Canal State Park Office and walk to the Route 29 bridge over the Wickecheoke. **Lockatong Creek:** There are two sites for this creek. *Site one (bacteria):* Continue on Route 29 N and pull off at the picnic area stream Left of Lockatong Creek. Use the area above the riffle upstream for bacteria samples. *Site two (fixed/gage height site):* Continue on Route 29 N then make a Right onto Federal Twist Road, and make another Right onto Rosemont-Raven Rock Road. Park on the Left side of the bridge over Lockatong Creek. **Bulls Island Foot Bridge (NJ-PA):** Get back onto Route 29 N and make a Left into the Bulls Island Access Area. Cross the canal bridge and continue as far as you can go and then park. Walk to the foot bridge to take the samples. **Warsaw Creek:** Continue on Route 29 N and make a Right onto Warsaw Road. Pull off to the Left in the shoulder. Walk down to the Route 29 bridge over Warsaw Creek. **Warford Creek:** Continue on Route 29 N and pull off to the shoulder at the sign that reads, “speed limit 50 mph, no stopping or standing, 1008-160/30.72” (just before mile marker 31. The site is at the bridge over Warford Creek about 30 feet past the sign. **Copper Creek:** Continue on Route 29 N and pull off to the shoulder after the driveway to the yellow house just before the bridge over Copper Creek (just south of the pipeline). **Kingwood Access:** Continue on Route 29 N and make a left into the Kingwood Access Area. Park and walk down to the boat launch and sample from there. **Little Nishisakawick Creek:** Continue on Route 29 N and make a left into the parking lot for the Blue Fish just before the bridge over the Little Nishisakawick Creek. **Nishisakawick Creek:** Continue on Route 29 N to Frenchtown, NJ, make a Right onto “Main Street,” then make another Right onto Kingwood Avenue/Route 12. The site is located on the Route 12 bridge over Nishisakawick Creek, park in the convenient store just over the bridge. **Harihokake Creek:** Get back onto Route 29 N and follow it to the bridge over Harihokake Creek. Park in the Liquor Store parking lot just North of the bridge and cross the street to take the sample/gage height.

#### PA CAR 2:

**Primrose Creek:** From DRBC take Route 29 N to Washington Crossing. Make a left and cross over to PA on the Washington Crossing Bridge. Make a Left onto Route 32 N. Continue on Route 32 N to the bridge over Primrose Creek (outside of New Hope). Park in the shoulder and walk to the bridge to take sample. **Stockton Bridge (NJ-PA):** Continue on Route 32 N to the Stockton Bridge. Park on the PA side at Dilly’s Corner (restaurant) and walk across the bridge to take samples. **Cuttalossa Creek:** Continue on Route 32 N, make a Left onto Cuttalossa Road (just past the Cuttalossa Inn), then park just before the first bridge which crosses Cuttalossa Creek. Walk to the bridge to take sample/gage height. **Paunacussing Creek:** Continue on Route 32 N to the bridge over Paunacussing Creek. Park before the bridge and walk across the street to sample. **Tohickon Creek:** Continue on Route 32 N to Point Pleasant, PA. This site is located on the Route 32 bridge over the creek. Park in a parking lot across the bridge to the Left and walk out onto the bridge to take the sample. **Tinicum Creek:** Continue on Route 32 N, make a Left onto Tinicum Creek Road, go past the yellow house, then make a Left into the first driveway (private drive). Drive to the tributary creek, get out of the car and walk downstream to the confluence with Tinicum Creek. Take sample downstream of the confluence and use surveying equipment or staff gage to get a gage height reading. **Frenchtown-Uhlerstown Bridge (PA-NJ):** Get back onto Route 32 N and follow it to Uhlerstown. Find a place to park near the bridge and walk across to take samples. **Milford-Upper Black Eddy Bridge (PA-NJ):** Continue on Route 32 N to the Milford Bridge, make a Right and park in the boat access lot just short of the bridge. **Hakihokake Creek (NJ):** Cross the Milford-Upper Black Eddy Bridge to NJ, continue on Bridge Street (don’t turn once crossing the bridge), park in the municipal lot approximately ¼ mile on the Right (just past the creek).

## **BACT Run 3, Milford to Easton Area**

**14 sites, 16 samples**

**Dates:** 7/1, 7/22, 8/12

**Staff:** 7/1: Limbeck, Wilcox; Kratzer, + 1 other (Ed or Tom - to Edison)  
7/22: Limbeck, Kratzer, Wilcox; + 1 other (Ed, Tom, Jason, Namssoo = Edison Runner))  
8/12: Limbeck, Kratzer, Wilcox + 1 other (Fikslin, Santoro, Tsai or Suk is Edison Runner)

**Sites: (2 cars: 1 up PA side, 1 up NJ side, meet & deliver samples to Edison)**

**Note Sampling Start Time: from that point you have 4 hours to complete this run.**

**Samples must be at Edison Lab less than 6 hours from 1<sup>st</sup> sample collection.**

**Keep in contact using DRBC cell phones - each hour and at end of run.**

### **NJ CAR 1**

Musconetcong River  
Riegelsville Bridge (PA,NJ)  
Pohatcong Creek  
Lopatcong Creek  
Easton Northampton St Bridge (PA, NJ)  
Bushkill Creek, PA  
Eddyside Park Beach Access, PA (private)  
Check Mud Run, PA, and sample if flowing (was dry on 6/15)

### **PA CAR 2**

Gallows Run  
Cooks Creek  
Riegelsville PA Fish Comm Access  
Fry's Run  
Wy-Hit-Tuk Access  
Lehigh River  
Sandt's Eddy Access

meet spot: Sandt's Eddy Access, runner use 22/78 to Edison

### **Driving Directions - see next page**

### **Collection & Transport Procedures**

Use meters to either measure instream if accessible or collect sample using bridge sampler (rope & metal case holding plastic sampling bottle). On bridges, sample at 1/3 and 2/3 channel (PA & NJ sides), lower sampler into river, allow to rinse thoroughly, retrieve sampler and pour into pre-labeled Whirl-Pak bag, store samples in cooler for transport to Edison lab. Repeat sample, use for pH and conductivity meters. Instream collection should be done by facing upstream and collecting sample in water undisturbed by your actions. if sampling in the Delaware, wade out to approximately 3 feet depth and open Whirl-Pak bag underwater at 1/2 depth, facing upstream. Do not contaminate the sample by allowing your hands to come in contact with the inside of the bottle. Air-calibrate DO meter, record air temperature, then lower probe by 100 ft cable into river. Read DO and water temperature. Record all results on water-quality form. Complete chain of custody form for bacterial samples, these are to accompany bacterial samples to EPA Edison lab.

## DRIVING DIRECTIONS

### BACT Run 3, Milford to Easton

#### NJ CAR 1:

**Musconetcong River:** From DRBC take Route 29 N to Milford, NJ, at the light in Milford turn Left onto Bridge Street, then turn Right onto Church Street. Follow Church Street around the curve (it will become a narrow road that runs along the river, Route 627). Use the River Road/Route 627 bridge to sample from. **Riegelsville Bridge (NJ-PA):** Go North on River Road, then make a Left onto Route 627 and take 627 N to the bridge. Walk out on the bridge and take samples. **Pohatcong Creek:** From the Riegelsville Bridge, continue North on River Road to the bridge over Pohatcong Creek. Park near the bridge and sample from the upstream side. **Lopatcong Creek:** From Pohatcong Creek, continue North on River Road (pay attention to the bends) to Carpentersville Road, then make a Left onto High Street and then make another left towards Phillipsburg, NJ (Main Street?). Park on the right side of the road by the Railroad Bridge Trestle. Walk back to the upstream side of the bridge over Lopatcong Creek. **Easton-Northampton Street Bridge (NJ-PA):** Continue down South Main Street (Phillipsburg, NJ) to the bridge. Park in the lot just short of the guard shack on the NJ side and walk out on the bridge to retrieve the samples. **Bushkill Creek:** Follow Route 611 N, go under Route 22 and then Bushkill Creek is to the immediate Right. It is tough to find parking at this location. Walk to the upstream side of the bridge to take sample and gage height measurement. **Eddyside Park Beach Access, PA (private):** Take Route 611 N to Eddyside Park. Park in lot. If no entry is possible, use the trail on the downstream fence of the park and take samples from upstream of the beach. **Check Mud Run, PA, and sample if flowing (was dry on 6/15):** Continue on Route 611 N to the bridge over Mud Run, just short of Sandt's Eddy, park and walk to the bridge to sample.

#### PA CAR 2:

**Gallows Run:** From DRBC take Route 29 N to Milford, NJ, then cross the Milford Bridge into PA. Take Route 32 N from the Milford-Upper Black Eddy Bridge to Route 611 N. The site is located at the Route 611 bridge over Gallows Run. Park at Philip Andrews Country Furniture/Pottery. **Cooks Creek:** Take Route 611 N, then make a Left onto Route 212, and lastly make a Right onto Red Bridge Road and follow the Road until you reach the bridge. Park before the bridge and walk to the downstream side to take the sample and gage height reading. **Riegelsville PA Fish Commission Access:** Continue on Route 611 N to the Riegelsville PA Fish Comm Access, make a right into the parking lot, and walk downstream to the access. **Fry's Run:** Continue on Route 611 N to Northampton County Park. Pull left into the parking lot. Sample from the old bridge located just upstream from the Route 611 bridge. **DO NOT SAMPLE FROM THE ROUTE 611 BRIDGE: too dangerous!!** **Wy-Hit-Tuk Access:** Continue on Route 611 N to Wy-Hit-Tuk Park. Pull off right and park by the canal bridge gate to left. Cross the canal and there is a path to the Delaware River about 10 yards to the Right, sample there. Careful, as slope may be slippery & steep in spots. **Lehigh River:** Continue on Route 611 N and pull into the McDonalds parking lot in Easton (on the Left). From the parking lot walk to bridge to sample upstream side. River is backed up by Easton Dam and is wide here, so take composite sample consisting of pours from bridge sampler at 1/3 and 2/3 channel. **Sandt's Eddy Access:** Continue on Route 611 N to Sandt's Eddy. Park in the parking lot and sample from the access area.

## **BACT Run 4, Easton Area to Delaware Water Gap**

**15 sites, 17 samples (get an early start, this day is long!)**

**Dates:** 7/8, 7/29, 8/19

**Staff:** 7/8: Limbeck, Wilcox; Kratzer, Suk (Edison runner)  
7/29: Limbeck, Wilcox; + 2 others (need Edison Runner)  
8/19: Kratzer, Wilcox + 2 others (need Edison Runner)

**Sites: (2 cars: 1 up PA side, 1 up NJ side, meet & deliver samples to Edison)**

**Note Sampling Start Time: from that point you have 4 hours to complete this run.**

**Samples must be at Edison Lab less than 6 hours from 1<sup>st</sup> sample collection.**

**Keep in contact using DRBC cell phones - each hour and at end of run.**

### **NJ CAR 1**

Buckhorn Creek  
Pophandusing Brook  
Pequest River  
Belvidere-Riverton Bridge (PA,NJ)  
Delawanna Creek  
Paulins Kill  
Dunnfield Creek

r

### **PA CAR 2**

Martins Creek  
Oughoughton Creek (dry 6/16)  
PPL Access @ Martins Creek plant  
Allegheny Creek  
Driftstone Campground Access  
Columbia-Portland Footbridge (PA,NJ)  
Jacoby Creek  
Slateford Creek

meet spot: NPS Information Center, I-80 eastbound side, Delaware Water Gap

**Driving Directions - see next page**

### **Collection & Transport Procedures**

Use meters to either measure instream if accessible or collect sample using bridge sampler (rope & metal case holding plastic sampling bottle). On bridges, sample at 1/3 and 2/3 channel (PA & NJ sides), lower sampler into river, allow to rinse thoroughly, retrieve sampler and pour into pre-labeled Whirl-Pak bag, store samples in cooler for transport to Edison lab. Repeat sample, use for pH and conductivity meters. Instream collection should be done by facing upstream and collecting sample in water undisturbed by your actions. if sampling in the Delaware, wade out to approximately 3 feet depth and open Whirl-Pak bag underwater at 1/2 depth, facing upstream. Do not contaminate the sample by allowing your hands to come in contact with the inside of the bottle. Air-calibrate DO meter, record air temperature, then lower probe by 100 ft cable into river. Read DO and water temperature. Record all results on water-quality form. Complete chain of custody form for bacterial samples, these are to accompany bacterial samples to EPA Edison lab.

## DRIVING DIRECTIONS

### BACT Run 4, Easton Area to Delaware Water Gap

#### NJ CAR 1:

**Buckhorn Creek:** From DRBC take Route 29 N to Milford, NJ. At Milford get on Route 519 N. Take Route 519 N to Roxbury Station Road to Hutchinson Road. The sampling site is located on the Hutchinson Road bridge over Buckhorn Creek. **Pophandusing Brook:** Continue on Route 519 N and follow signs for Belvidere, NJ. Once in Belvidere, take Greenwich Street to Fifth Street, and then make a Left onto Spring Street (a Dead End Road). This road crosses Pophandusing Brook. Park past the bridge and the house adjacent to the bridge on the Left hand side of the road. Walk back to the bridge to take the sample and the gage height reading. **Pequest River:** There are two sampling sites on the Pequest River. The first is the bacteria sampling site, located on the Market Street bridge over the Pequest River in Belvidere, NJ. The second is the Fixed water-quality monitoring site, located about one mile upstream at the Orchard Street bridge over the Pequest River. Take the gage height reading from this site.

**Belvidere-Riverton Bridge (PA-NJ):** This site is also in the town of Belvidere, NJ. To get there head towards the river, park near the bridge and walk out to take samples. **Delawanna Creek:** Take Route 620 out of Belvidere, then get on Route 46 N and park at the end of the ACI Truck Stop (on the Right). Cross the road to the downstream side to take the sample and the gage height. **Paulins Kill Creek:** Continue on Route 46 N. Cross over the bridge over Paulins Kill Creek, just before the Route 94 N off ramp. Park in the Colombia Lake Wildlife Management Area Lot. Walk back to the bridge to take the sample and the gage height reading. **Dunnfield Creek:** Continue on Route 46 to Interstate-80 E. Exit I-80 at the NPS Visitor Center. From the visitor center, cross under Interstate-80, turn left toward the westbound ramp and pull into the hiker parking lot. Walk down the trail to the foot bridge and take the sample and gage height reading there.

#### PA CAR 2:

**Martins Creek:** From DRBC take Route 29 N to Milford, NJ, cross the Milford-Upper Black Eddy Bridge to PA, turn Right onto Route 32 N, then take Route 611 N, make a Left onto Little Creek Road. The site is on the upstream side of the bridge. Park and walk to the bridge to take the sample. **Oughoughton Creek (dry 6/16):** Continue on Route 611 N, and when 611 makes a sharp “L” go straight to the PPL Access. Then make a Right onto Foul Rift Road (PPL sign), and then make another Right onto Depues Road (PPL sign to access). Just past the left turn for the boat access is Oughoughton Creek bridge. Park and walk to the bridge to take the sample and the gage height reading. **PPL Access @ Martins Creek plant:** Turn around on Depues Road, and make a Right into the fishing access area. (Make Right into lot just before the railroad tracks.) Park in the lot and walk to the access to take the sample. **Allegheny Creek:** Go back out to Foul Rift Road (toward the Belvidere Bridge), make the last Left before the bridge (at sign: Portland 9 miles). Then make a Right (UPHILL) onto River Road. Allegheny Creek is the second bridge. Park at the intersection with Shady Lane past the bridge. Walk to the upstream side of the bridge to take the sample and the gage height reading. **Driftstone Campground Access:** Continue North on River Road. See campground on Right. Enter just after a sharp Right curve. Park in the grass to the Right of the boat ramp behind the office. Walk to the boat launch and take the sample. **Colombia-Portland Footbridge (PA-NJ):** Continue North on River Road to Route 611. Go through the light and park on the Right past the depot. Walk out onto the foot bridge and take the samples. **Jacoby Creek:** Continue on Route 611 N to the small bridge just past the off ramp for the toll bridge. (See the Service Star on the Right and the Portland Diner on the Right just past the bridge). Park near the bridge and walk to the upstream side to take the sample and the gage height reading. **Slateford Creek:** Continue on Route 611 N to National Park Road (it will be a Left off of Route 611 N). The first bridge on this road is the sampling site. Park just short of the bridge and walk to the upstream side to take the sample and gage height reading.